DOCUMENT RESUME

ED 150 583 CS 203 878

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TITLE Whatever Happened to the California Job Case? And Did Editorial Quality Go With It?
PUB DATE Aug 76
NOTE 16p.; Paper presented at the Annual Meeting of the Association for Education in Journalism (59th, College Park, Maryland, August 1976); Not available in hard copy due to marginal legibility of original document

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS *Cost Effectiveness; *Editing; *Electromechanical Technology; *Employment Trends; Journalism; *Layout (Publications); Media Technology; *Newspapers; Printing

ABSTRACT

This paper surveys the state of newspaper technology, with special reference to its impact on editorial quality. Examples of financial savings resulting from electronic editing and typesetting are cited, along with a complete budget for a paper of around 100,000 circulation before and after automation. Studies of newsroom salary and employment trends are used to provide guidelines for reinvesting some of the savings into better editorial coverage. (Author)

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WHATEVER HAPPENED TO THE CALIFORNIA JOB CASE? AND DID EDITORIAL QUALITY GO WITH IT?

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY Katherine Kulczyk

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

by

Katherine Kulczyk, Kathryn Simon

and Robert L. Bishop

Old habits die hard. Probably the first scribe to see papyrus shook his head and said, "There goes literature. Now any fool will be able to scribble the first thing that comes into his head. Not like the old days, when you had to give every phrase some real thought before putting a chisel to your stone!"

Reactions to computers in the newsroom have been along the same lines. When one highly-touted newspaper system was installed, all the old typewriters were taken out. Frustrated reporters found that, due to insufficient safeguards, their entire stories sometimes were lost -- and with no original copy to go back to. So for a long while they used a bootleg scheme -- typewriters in the back seat of their cars. It got pretty cold, in a parking lot in January, but at least the writer had something tangible -- not just a bunch of electronic blips on a TV screen which might go blank at the worst possible moment!

That particular problem has been solved by automatically storing a duplicate of the reporter's story as he types it into the computer system -- and most of the staff are right at home with the new technology. But technology does have a real impact upon both the

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finances and the quality of the paper, and journalists are finding out that they must understand technology and fight for a voice in its adoption if the editorial side is to benefit from these electronic wonders.

Automation in the newspaper industry has been going on ever since Johann Gutenberg invented movable type. But the present round began when publishers tried to speed up the typesetting process. The first step was the invention of punch paper tape. News agency stories began to appear on strips of paper tape punched full of holes. The tape could be fed through an attachment which would run a typesetting machine at roughly three times the speed a manual operator could sustain. Furthermore, one mechanic could oversee three to five machines.

But all this did was to speed up typesetting to something like 60 to 75 words per minute. Even when local copy was fed through the system, it still was very slow and very expensive.

One of the next steps was to automate justification and hyphenation. Operators simply typed straight copy, never bothering about making the lines fit. Their "blind," or "idiot" tape was then fed into a computer, which divided it into lines of the proper length and hyphenated words between lines when necessary.

Finally, using recent developments in computer technology, several ways were found to make the journalist's typing of his story the only keyboarding involved in the entire operation.

The first commercially successful system was optical scanning, or optical character recognition, usually called OCR. In this system, the reporter types his story on a specially-equipped electric typewriter. The paper is then fed through a scanner -- a system of tiny

television cameras which translate each letter into electrical impulses which can then be spit out as punch paper tape or fed directly into a computer and a phototypesetter.

This system proved very cost effective, but a real nuisance when extensive editing had to be done. Corrections must be typed neatly onto the original copy, following specific instructions. If the copy needs real work, the story must be retyped.

The next development was the Video Display Terminal. Essentially, a VDT is a typewriter hooked to a television set so that each letter appears on the screen instead of on paper. (A VDT which uses a TV screen is called a cathode ray tube terminal, or CRT. A few terminals use a different display system called a plasma tube, but are not commercially available).

VDT systems vary a great deal in sophistication and cost. The cheapest systems read copy into the computer by optical scanners. Editors may then have the story displayed on VDT screens for editing. The chief advantage of VDTs over OCR is that it is very easy to move blocks of copy around from the bottom to the top of the story, to insert words, sentences or paragraphs, or to delete errors or unnecessary materials.

The output from either the VDT or the OCR systems may be used to run hot metal typesetting devices, but they are much more efficient when hooked up to some form of photocomposition. One photocomp, which costs approximately what one of the old hot metal typesetters did, can produce around 300 newspaper lines per minute.

Other systems, using pure electronics rather than optics coupled to electronics, are much more spectacular.

The trouble with photocomposition has been that it was too expensive to convert the phototype into a metal plate to fit the high speed presses which large dailies must have. The ideal combination would be VDTs, photocomposition, and lithography. But until recently, lithograpy, has not been capable of high speed runs and has been hampered by the high cost of plates.

Several compromise solutions have been reached within the last five years. Three different approaches have been tried more or less successfully: shallow relief plates, pattern plates, and direct lithography. Shallow relief plates are full-page engravings, but the type is only .02 inches high. This plate is locked to a heavy saddle and then may be used on regular newspaper presses, though some fairly costly adjustments are necessary in order to maintain quality. The plates allow publishers to make full use of photocomposition without buying all new presses. They are light and easy to use, but far more expensive than the old stereotype plates. A newspaper often prints on six or more duplicate presses simultaneously and, while duplicate stereotype plates cost about six cents apiece, each shallow relief plate may cost $2 to $4. This could cost a paper such as the Los Angeles Times $2 million or more each year.

Other disadvantages include the cost of equipment. Refitting presses can run anywhere between $20,000 and $500,000, and labor costs also climb. The time factor is slight, but important.

Working from hot metal, a good crew can have a page stereotyped and on the press in about 18 minutes, even faster for duplicate castings. The shallow relief plates take around 20 to 25 minutes from page to press. And unless the presses are well maintained and scrupulously attended, printing quality will go down.

A pattern plate is a shallow relief plate made so that the printing surfaces stand up about .04 inches. This tiny extra depth allows mats to be made which may then be used to produce stereotype plates in the usual manner. The equipment for such a system may cost $300,000 or more, but the plates are turned out for pennies instead of dollars.

Direct lithography is being experimented with on small to medium-sized dailies. An offset printing plate is used on a letterpress. But instead of printing on a rubber blanket which then prints on paper, the plate prints directly on the paper. Conversion costs are about 25 per cent of what a new offset press would cost, and plates are relatively inexpensive -- around 70 cents apiece.

Several other revolutionary methods are in the works. One involves thousands of tiny ink jets which spray words and pictures onto paper by computer control. Electrostatic printing is feasible for small jobs. And not too far off looms the possibility of the wired city, where newspapers might not be printed at all.

Some electronic newspapers are already in operation. One such system has an entire file of news briefs and financial information continually circling New York City. A subscriber types in a simple

code, specifying that he would like to see an index. Using what is called a "frame-grabber" technique, his terminal then catches and copies the index on its next circuit -- almost simultaneously. If the subscriber then wants more information on a particular story, he types in the number of that story, and it is grabbed and displayed on his screen until he is through using it.

WHAT DIFFERENCE DOES IT MAKE?

This paper is primarily for journalists, and so our concern is, what difference does all this make to reporters and editors? Will it leave everything unchanged except that we have to learn to use electric typewriters and VDTs? Or does it mean the end of journalism as we know it?

As always, the truth is probably somewhere in between. Journalism as we know it will change -- but the essential functions of gathering, interpreting, and disseminating information will remain. There will be changes in modes of operation, in status symbols in the newsroom, and probably changes in emphasis, changes in style, changes in opportunity.

The Financial Impact on Newspapers

Money is the immediate reason for these changes. The composing room accounts for about 20 per cent of total expenses and, theoretically, all of those costs may be wiped out if the reporter does the typesetting at the same time that he or she types the story for the first time. A paper with around 40,000 circulation expects

to employ 50 to 60 typographers. Even an efficient shop ends up paying from $40 to $100 per page in composing costs alone. A fairly typical 40,000 circulation daily may be spending half a million each year for composition. And a paper like the New York Times, which was spending 24.5 man hours per page in 1973, put more than $170 into each page of that Sunday hernia special!

The paper is rarely able to eliminate an entire work force, of course. Some claim that their real savings come from not having to hire additional people as the newspaper expands. This means that savings accrue more slowly, but it also avoids costly strikes.

For example, a midwestern paper with about 60,000 circulation converted to computer typesetting in 1962. At that time, it took 11 man hours to produce each page. Two years later, only one hour per page had been shaved off, and only four typesetters out of 73 had left the paper. By 1969 another six men had gone, and the paper was taking seven man hours per page. And in 1972, the 51 composing room employees were putting out a page in 5.75 hours. It had taken ten years to cut 12 people off the payroll (and many of these were given substantial early retirement benefits) and to cut work time in half.

Some papers make the transition much more quickly. The Corpus Christi Caller and Times cut composing room hours per page from 8.5 in 1972 to 3.7 in 1973, lopping their work force from 219 to 134. Lee Enterprises had 616 printers for their 14 newspapers in 1964. By 1973, these had been cut to 434.

A VDT leader is the Detroit News. It reduced its composing room force from 480 to 430 in one year -- saving more than $750,000 in the process. The News has a strong typographers union and an arbitration decision has prevented them from making full use of the system. Media General, on the other hand took a strike at their Richmond, Va. papers and replaced the striking printers with lower cost help, reducing the payroll by $1.2 million. And the Worcester, Mass. Telegram and Gazette replaced 12 paper tape perforators who together earned about $120,000 annually with one scanner system costing $89,000.

One clear impact, therefore, is a drastic cutting of expenses. Almost every company which has converted to computer typesetting expects to pay for its equipment in three years or less. Many seem to do so within nine months. This has allowed papers to adopt less-than-perfect systems, knowing that if technical advances make the equipment obsolete in three or four years time, the paper will still have made money by converting. Table 1 gives a reasonable estimate of the impact on a 100,000 circulation daily.

Table 1 about here

Another possible impact is the lowered cost of entry into newspaper publishing. An offset publication can begin with no equipment at all, and a very adequate plant for a 10,000 circulation daily can be purchased for around $150,000. This makes it quite possible to start papers in new suburbs and, some predict, to

Table 1

EFFECTS OF AUTOMATION ON A 100,000+ CIRCULATION DAILY

	Before Automation	After Automation
Revenue		
Circulation	$ 3,951,600	$ 3,951,600
Advertising	14,705,400	14,705,400
Total	$ 18,705,000	$18,705,000
Expenses		
News-editorial	$ 2,140,200	$ 2,140,200
Advertising expense	1,202,400	1,202,400
Circulation, distribution	1,643,800	1,643,800
Composition	1,774,240	400,000*
Other mechanical costs	1,814,360	1,814,360
Newsprint, ink & handling	3,508,000	3,508,000
Administrative & general	3,171,200	3,171,200
New VDT and pattern plate system, amortized over 8 years, $600,000 @ 10%		105,000
Probable additional expense for early retirement over 8 years, $5,200 per man annually, 50 situations		260,000
Total	$ 15,254,200	$ 14,244,960
Net before taxes	3,450,800	4,460,040
Tax credit		60,000
Net after U.S. taxes	1,794,416	2,379,221
Increased profit		584,805

*Allowance for retraining and for maintaining present wage scale for typographers assigned other duties.

restore competition to the American scene. One should not be so optimistic about the latter, however. Plant cost is only a fraction of the real cost of entry. A paper starting up in a competitive situation will have to run at a heavy loss for three years or more -- and some of the best and/or best-financed groups in the country have had to admit that they could not buck an established paper, no matter how superior a product they produced.

A third financial impact is a high rate of obsolescence. Letterpress equipment has been written down to almost nothing already -- papers find it hard to give away their typesetting machines. But the same fate quickly overtakes electronic gear. Advances in mini-computers, terminals, full page makeup by computer, and printing or electronic delivery systems make the choice of a system an agonizing one. The only thing a buyer can be sure of is that something better will be on the market before his gear is up and running. Terminals, scanners and computers are being depreciated over three to eight years, creating a demand for equipment replacement funds far beyond what the industry has had to maintain.

The main financial question from the journalist's viewpoint is, what happens to the money? Are all those savings going out to stockholders and to newsprint suppliers? Or is some of it being plowed back into the newsroom, since many systems slow down reporting and editing, and since most newspapers don't have an adequate staff. Note that, in the example given in Table 1, profits are up

by 33 per cent -- the equivalent of 27 per cent of the news budget.

Repeated studies have shown that journalism salaries -- disgracefully low to start with -- have been very slow to rise. For example, between 1954 and 1966, profits for Editor & Publisher's medium sized daily increased by 338 per cent. Total wages and salaries went up by 116 per cent, production workers' pay climbed 60 per cent, and newspaper salaries went up 43 per cent.[1]

Or consider the following table:

Table 2

REPORTERS AND CIRCULATION

	Number of Reporters		
Circulation Group	Low	High	Average
500,001 and over	54	135	83
250,001-500,000	37	126	70
100,000-250,000	20	135	45
50,001-100,000	10	40	22
25,001-50,000	2	36	14
10,001-25,000	0	18	7

Source: Edward J. Trayes, "Newsroom Manning Levels for Daily Newspapers Over 10,000 Circulation," Journalism Quarterly 49:3 (Autumn 1972) 579-582

Of particular interest is the wide range of employment. It is almost impossible to conceive of a paper of more than 50,000

circulation with only ten reporters, and frightening to imagine what goes into the 25,000 plus paper which gets along with only two, or the 10,000 plus which has no full-time reporters!

In short, the newspaper which pays less than $175 per week to beginning reporters or which has fewer reporters than the average reported above, owes both its news staff and its community a good slice of any increased profits from automation. But if the news staff does not have a realistic estimate of the savings and a united voice in pressing for its rights, it will simply take over another chore at no extra pay and with no professional recompense either.

It is a pleasure to report that some publishers are using their windfalls to upgrade the editorial function. The Huntington, W.Va. papers, now owned by Gannett, had a news budget of $753,000 and a production budget of $1,038,000 in 1971. After the introduction of computerized typesetting, the paper had an editorial budget of approximately $1,200,000 for 1975, while production expenses remained at 1971 levels.[2] But one suspects that such reports are rare.

The second question for journalists is, what happens to editorial quality? We have mentioned the problems of presswork. If the publisher is not willing to invest enough money to maintain

close quality control, the product is going to suffer drastically. More importantly, the need for quality control, the traffic jam when advertising, editorial and business people all fight for the same machines, and the demands of distribution and advertising often result in deadlines being pushed back instead of forward. The editorial staff needs to know that this is not a necessary outcome. Proper planning of the computer system and a strong editorial voice in its operation should allow the newsroom to move deadlines closer to actual press time.

Speed is also a factor in deciding whether to use OCR or VDTs. The OCRs cannot help but slow down the writing and editing functions, though they pick up a lot of speed over conventional typesetting. VDTs should be as fast or faster as the old methods for the reporter, but Larry Allison of the Long Beach Independent Press-Telegram estimates that the VDT is probably ten times slower for wire editing, four or five times slower at the news desk, and perhaps twice as slow in many copy desk functions. These seem very pessimistic estimates to the author; there seems no reason why editing should not be almost as fast as the quickest copy pencil except in cases where one must merge two wire stories. Here, too, terminals with a larger display screen than those currently in use (the normal display is limited to about 1900 characters) and split screens which would allow both versions to be displayed at the same time, should solve the problem.

There is one clear gain -- fewer typos. Every re-keyboarding of a story offers endless chances for typographical errors, not to mention lines which get dropped or put in the wrong story. Electronic editing lets you see what you get before you get it. OCRs will introduce an occasional error. Though it is claimed that this is less than one out of 10,000 characters, this is based on clean copy, fresh ribbon, no nicks in the type ball, etc. VDTs are practically-error-free. Compare that to hot metal or to manual tape perforations, where you may expect one or two errors every 15 lines -- and sometimes get twice as many when you try to correct the original goof.

A much more troublesome problem is editing. Papers virtually stopped editing wire copy when it began to arrive in punch tape form, because it was almost impossible to do anything more than lop off a paragraph or two at the end of the story. The only other way, unless you had your own computer handling the tape, was to correct galley proofs -- a very expensive and cumbersome way to go. The analogy to OCR is painfully obvious. Reporters are either going to do two drafts of their stories -- not a bad idea -- or they are going to be very reluctant to fiddle around with them at all. And the copy editor, faced with either putting the story in his own typewriter and doing a clerical job or with waiting for a typist to do the job, is not going to be as hard-nosed as he or she should be.

If the paper uses VDTs for editing OCR copy, some of the problem is alleviated. Even more helpful is the all-VDT news operation. But here is another instance in which time and money saved in one part of the process should be used to maintain or upgrade quality in the heart of the matter.

There's no question that the California job case is gone, claimed by antique lovers. But quality needn't be left to the antiquarians -- not if journalists care enough to fight for it.

FOOTNOTES

1. Guido H. Stempel III and Paul H. Wagner, "An Analysis of Newspaper Editorial Pay, 1954-66," Journalism Quarterly 46:2 (Summer 1969), 281-286.

2. John McMillan, executive editor of the Huntington papers, at a New Technology Seminar for Journalism Professors, sponsored by the Gannett Newspaper Foundation, June 8-13, 1975, Northwestern University, Evanston, Ill.